

WHAT IS CLAIMED IS:

1. A system for maintaining an IC-module near a set-point temperature while electrical power dissipation in said IC-module is varied; said system being comprised of:

a container having an open end with a seal for pressing against said IC-module;

at least one nozzle, in said container, for spraying a liquid coolant on said IC-module when said seal is pressed against said IC-module; and,

at least one window, in said container, for passing electromagnetic radiation to said IC-module when said seal is pressed against said IC-module.

2. A system according to claim 1 which further includes a closed-loop control means for - a) receiving a sensor signal representing a sensed temperature of said IC-module, b) generating a first control signal, if said sensed temperature exceeds said set-point, which passes said liquid coolant through said nozzle onto said IC-module, and c) generating a second control signal, if said set-point exceeds said sensed temperature, which sends said radiation through said window onto said IC-module.

3. A system according to claim 2 wherein said closed-loop control means generates said second control signal with an ON-OFF ratio that increase as the difference between said set-point and said sensed temperature increases.

4. A system according to claim 2 wherein said nozzle is replicated at spaced-apart locations in said container, and said window is replicated between said spaced-apart locations.

5. A system according to claim 2 wherein said window is transparent to infrared radiation, but blocks said coolant in both a liquid state and a gas state.

6. A system according to claim 2 wherein said nozzle is replicated at spaced-apart locations in said container, and each nozzle ejects just a single droplet of said liquid coolant when it receives said first control signal.

7. A system according to claim 6 wherein said closed-loop control means sends said first control signal to all of said nozzles simultaneously with a frequency that increases as the difference between said sensed temperature and said set-point increases.

8. A system according to claim 6 wherein said closed-loop control means sends said first control signal to a subset of said nozzles simultaneously, and increases the number of nozzles in said subset as the difference between said sensed temperature and said set-point increases.

9. A system according to claim 6 wherein each nozzle ejects said droplet by squeezing said coolant with a piezoelectric device.

10. A system according to claim 6 wherein each nozzle ejects said droplet by heating said coolant with an electric heat r.

11. A system according to claim 2 wherein a nozzle sprays multiple droplets of said liquid coolant when it receives said first control signal.

12. A system according to claim 11 wherein said closed-loop control means generates said first control signal with an ON-OFF ratio that increases as the difference between said sensed temperature and said set-point increases.

13. A system according to claim 2 wherein said seal is shaped to encircle a surface on said IC-module which encloses an IC-chip.

14. A system according to claim 2 wherein said seal is shaped to encircle an exposed surface on an IC-chip in said IC-module.